

A Unique Use for a Corneal Tattoo

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ABSTRACT

Introduction: Corneal tattoos have been previously used in managing corneal pathologies.

Methods: We describe a case of a 28-year-old male who presented with intractable binocular diplopia, which was relieved with a corneal tattoo.

Conclusion: This is a novel application of corneal tattooing for the alleviation of intractable binocular diplopia.

KEYWORDS: intractable binocular diplopia; corneal tattoo

INTRODUCTION

Patients suffering with intractable binocular diplopia often fail to respond to surgical and nonsurgical treatment strategies and have to consider occlusion to ameliorate their symptoms. Occlusion can be achieved with eye patches, Bangerter foils, frosted or blackout spectacle lenses, occlusive contact lenses, or opaque intraocular lenses¹. This case is a new indication for relieving binocular diplopia.

CASE REPORT

A 28-year-old patient presented with intermittent intractable binocular diplopia when fixing with the right eye. He had a history of congenital alternating esotropia and had undergone bilateral medial rectus recession and right lateral rectus resection (1986) and right inferior rectus recession (1996). In 2004, he underwent extensive surgery: bilateral medial posterior fixation sutures, subtotal superior

oblique tenotomies, left lateral rectus resection, and right superior rectus recession, on adjustable sutures.

On initial presentation in 2005, his visual acuity was 6/9 in the right and 6/6 in the left eye while wearing rigid contact lenses (−3.00DS right, −1.50DS left). Cover test showed a right esotropia with hypotropia. He had no detectable potential for binocular vision.

Botulinum toxin injection to the right medial rectus was offered in conjunction with an occlusive contact lens on the right eye. Further surgery was felt not to be an option due to the high risk of inducing consecutive exotropia.

The patient underwent botulinum toxin treatment to the right medial rectus in July 2005 and developed a transient consecutive exotropia. At this point, he was satisfied with his appearance and had no diplopia. Botulinum toxin injection was repeated 6 months later. The patient subsequently left the country and reattended in September 2008. In the meantime, he had undergone a right corneal tattoo in March 2008, performed by a refractive surgeon, as shown in Figure 1. The corneal tattoo measured 4.5 mm in diameter and was brown (Figure 2). Since having the tattoo, the patient no longer complains of diplopia and, to date, does not report any significant side effects. He was, however, still aware of his right

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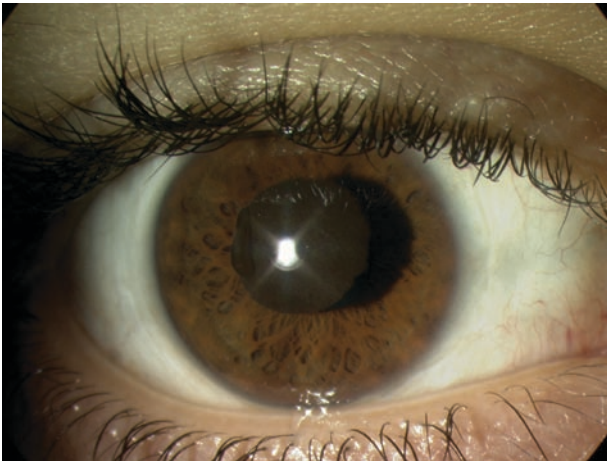


FIGURE 1 Corneal tattoo encroaching the visual axis.

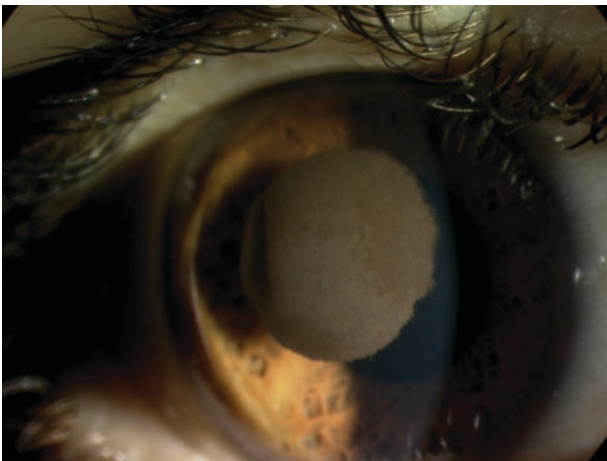


FIGURE 2 The tattoo as seen with specular reflection.

esotropia, hence returning to our department for further botulinum toxin treatment.

DISCUSSION

Corneal tattooing has been carried out for over 2,000 years. It was first used by Galen in the treatment of unsightly leucomata². It became popular in the late 19th century and early 20th century for the treatment of corneal scarring. This technique has become less commonly adopted following advancements in corneal surgery, printed contact lenses, or shells. Nevertheless, Pitz et al. reported a case series of 11 patients who underwent corneal tattoo for disfiguring corneal scars³. Chinese ink is usually administered by impregnation and carries a significant risk of unpredictable staining and inflammation, as reported by

Pomella and Wagner⁴. The procedure is carried out by hand, using a standard tri-bevel needle similar to that used for body piercing, and standard drawing inks. The needle is dipped in ink and then poked at an angle, thereby creating a long puncture, into the corneal stroma. It is important to rinse the eye with saline periodically as it becomes obscured with ink. This procedure works well in 90% of patients, while in the remaining 10% the ink fades away. During the healing process patients experience foreign body sensation as well as some redness. Primary healing takes about a week, which is similar to a cutaneous tattoo.

It has been suggested that it is better to apply the coloring agents intralamellarly as this provides uniform distribution of the color when applied on a smooth lamellar surface as against the irregular epithelium, which is expected with corneal scars. It also minimizes the chances of development of an irritable eye, which is expected when the agents are applied to the corneal surface.

Iatrogenic corneal tattoo is a preferred option in non-seeing eyes due to the potential risk of toxicity and accidental corneal perforation. The use of therapeutic corneal tattoo in a seeing eye has been reported by Islam and Franks to obtain relief from glare following YAG laser PI⁵.

Our patient had a visual acuity of 6/9 in the tattooed eye. We are not aware if the possibility of an opaque intraocular lens was discussed with the patient prior to the corneal tattoo. Interestingly, we found this elective procedure to be a rather radical and irreversible solution in an eye with good vision, but it must be pointed out that the patient found all other occlusive modalities either cosmetically unacceptable or unsatisfactory. There is just one other report in the literature of a central corneal tattoo performed to relieve intractable binocular diplopia⁶. In this case report, the patient tried patching, occlusive contact lens, and botulinum toxin to induce ptosis but found these methods ineffective. Corneal tattooing was suggested by the treating ophthalmologist as a safer alternative than an opaque intraocular lens.

Over 1 year later, our patient continues to be completely symptom-free.

REFERENCES

1. Hadid OH, Wride NK, Griffiths PG, Strong NP, Clarke MP. Opaque intraocular lens for intractable diplopia: experience and patients' expectations and satisfaction. *Br J Ophthalmol*. 2008;92:912-915.
2. Leigh AG. Tattooing of the cornea. In: Duke-Elder S. *System of Ophthalmology*. Vol VIII, part 2. London: Harry Kimpton, 1965:645-648.

3. Pitz S, Jahn R, Frisch L, Duis A, Pfeiffer N. Corneal tattooing: an alternative treatment for disfiguring corneal scars. *Br J Ophthalmol*. 2002;86:397–399.
4. Pomella KM, Wagner H. Unilateral Peters' anomaly complicated by a corneal tattoo. *Optom Vis Sci*. 1998;75: 635–639.
5. Islam N, Franks WA. Therapeutic corneal tattoo following peripheral iridotomy complication. *Eye*. 2006;20: 389–390.
6. Stone NM, Sommer JE, Jay JL. Intractable diplopia: a new indication for corneal tattooing. *Br J Ophthalmol*. 2008;92(11):1445, 1561-1562.

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